PCT WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : G07F 7/10, 17/16

A1

(11) International Publication Number: **WO 99/56254**

(43) International Publication Date: 4 November 1999 (04.11.99)

(21) International Application Number: PCT/ZA99/00023

(22) International Filing Date: 23 April 1999 (23.04.99)

(30) Priority Data:
98/3469 24 April 1998 (24.04.98) ZA

(71) Applicant *(for all designated States except US)*: CLARIDGE TRADING ONE (PROPRIETARY) LIMITED [ZA/ZA]; The Forum Building, 17th floor, Corner 5th and Maude Streets, Sandton, 2146 Johannesburg (ZA).

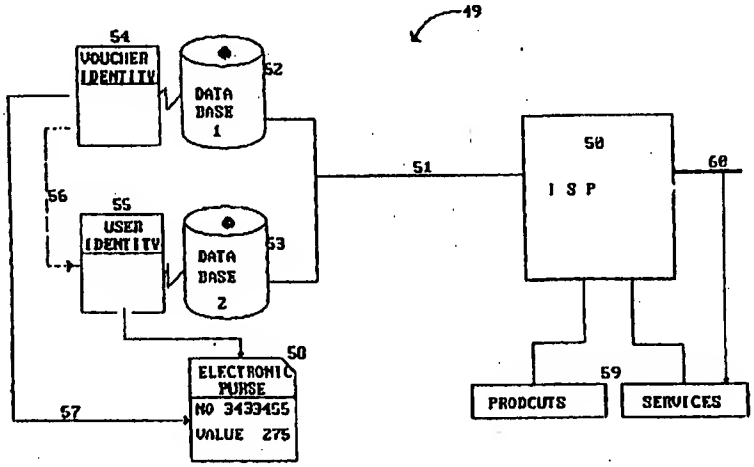
(72) Inventor; and
(75) Inventor/Applicant *(for US only)*: BERRY, Jason, Peter [ZA/ZA]; 43 French Lane, Morningside, Rivonia, 2128 Johannesburg (ZA).

(74) Agent: D.M. KISCH INC.; P.O. Box 781218, 2146 Sandton (ZA).

(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published
With international search report.
Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

(54) Title: PREPAID ACCESS FOR INFORMATION NETWORK



(57) Abstract

This invention relates to a method and a system for enabling access to an information network and the monitoring of information products or services available thereon. The invention includes a method and a system for enabling users to access information networks using a prepaid system. The invention relates to the interfacing of user actions with an electronic purse (58), used to pay for information products (59) and services (60). Furthermore, the invention allows for access to an information network such as the Internet using a pay–as–you–go type accounting system. Users deplete their available credit as they use or access services or products and can replenish them in real time or when access is again needed. The credit balance is stored at the user base or on one or more databases (52, 53) of at least one or more of the following: the Internet service provider, the financial institution or the administrator. The credits could be used to purchase other products available from sites that are accessible on the information network.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece			TR	Turkey
BG	Bulgaria	HU	Hungary	ML	Mali	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MN	Mongolia	UA	Ukraine
BR	Brazil	IL	Israel	MR	Mauritania	UG	Uganda
BY	Belarus	IS	Iceland	MW	Malawi	US	United States of America
CA	Canada	IT	Italy	MX	Mexico	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NE	Niger	VN	Viet Nam
CG	Congo	KE	Kenya	NL	Netherlands	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NO	Norway	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	NZ	New Zealand		
CM	Cameroon			PL	Poland		
CN	China	KR	Republic of Korea	PT	Portugal		
CU	Cuba	KZ	Kazakstan	RO	Romania		
CZ	Czech Republic	LC	Saint Lucia	RU	Russian Federation		
DE	Germany	LI	Liechtenstein	SD	Sudan		
DK	Denmark	LK	Sri Lanka	SE	Sweden		
EE	Estonia	LR	Liberia	SG	Singapore		

PREPAID ACCESS FOR INFORMATION NETWORK

TECHNICAL FIELD

This invention relates to a method and a system for enabling users to request a certain bandwidth for accessing information products and services on an information network, as well as a pre-payment interface for such access.

Access to a traditional information network, such as the Internet, is provided by an Internet Service Provider (ISP) with a regional Point of Presence (POP), enabling subscribers to dial into an ISP in order to access information networks, such as the World Wide Web (WWW), or related products such as E-mail or news groups. Subscribers typically pay a fixed annual or monthly fee to an ISP for the privilege of accessing the Internet.

Internet subscribers and ISP's are often victim to one or more of the following disadvantages. The cost of general Internet access is a fixed annual or monthly subscription fee, regardless of the duration of time spent accessing the information network, the rate of downloading of information or the time of day at which the accessing of information takes place. With this costing method, the users who occasionally spend small amounts of time accessing specialised services, such as E-mail, are prejudiced as opposed to users who exploit their Internet subscriptions by downloading large quantities of information. Furthermore, all users share the available bandwidth with the result that large

information downloads slow the rate of data transfer for all users. Users who make large information downloads during peak hours overload the network, forcing the ISP to provide a wider bandwidth, at high cost, to accommodate all subscribers. Although this costly provision is necessary to cater for subscribers during peak hours, the wider bandwidth is not required and therefore is mostly unnecessary for the greater part of the day, during the off-peak hours.

BACKGROUND ART

Prior art discloses standard networks and procedures involving the access of information services by means of logging into an ISP and providing an access password, which is subsequently verified against information contained in a database. Payment is contractually based on a fixed amount, usually effected by means of a debit order executing payment from subscriber account to ISP.

Network access and data transfer is dependent on the number of subscribers on-line at any specific time and the general usage of communications such as the sharing of bandwidth. Alternatively, subscribers may request a bandwidth from an ISP and may be charged at a proportional rate.

Accordingly, it is an object of this invention to provide subscribers with access to information services at a rate that is dependent on the duration and conditions of use as well as the speed of information transfer. An object of the invention

is also to enable users to specify and select services associated with a specific bandwidth or data throughput. It is a further object of the invention to enable users to purchase access credit from the ISP before using the service and to subsequently deplete their credit, as the services are used, at a rate proportional to the features of the selected service, i.e. bandwidth, time of access, etc.

The objectives further include the accessing of an information network through an ISP without the pre-registration of an account with users simply dialing into an ISP, entering credit card details for on-line payment, selecting the length of time and/or bandwidth needed and receiving credit that could be depleted as services are used. Furthermore, should a user require a specific data throughput, resources may be allocated specifically by the ISP, guaranteeing the requested transfer rate. When credit is completely exhausted, a screen input could prompt the user to purchase further credit without having to interrupt the connection.

A further objective of the invention is for ISP's to expand their business to a market segment that prefers to pay according to information network usage, rather than a fixed monthly payment with standard connection and data throughput. ISP's could thus be enabled to manage their resources more effectively by redistributing the bandwidth requirement and adapting their service to specific user requirements. Furthermore, income could be guaranteed and costly financial management could be minimised. The object of the

invention is to limit the monthly payment and account management, adding value to the administration infrastructures of ISP's.

A general object of the invention is that, if large information downloads were transferred during off-peak hours, the bandwidth requirement could be reduced. In this manner, an ISP could economise on the improved workload distribution by expanding its business to cater for more subscribers, without incurring the additional cost of increasing the available bandwidth. In addition, recreational subscribers would have improved data transfer speeds while large information downloads would be faster and more cost effective, in terms of telephone usage, to the user.

DISCLOSURE OF THE INVENTION

According to a first aspect of the invention there is provided a system enabling user-specific access to an information network on a pre-paid basis, the system including at least one user communication means at user base for communicating with at least one service provider, with communication means to at least one information network; means for facilitating communication between the user and the service provider; at least one mechanism for allocating credit to a user identification; and a management system that manages the distribution of bandwidth resources according to user requests and reflects the use of these services, at a specified charge, by depleting the credit in an

electronic purse of the user. The service provider is preferably an ISP. A user base may be at home or in an office and the communication means may include a personal computer with a device such as a modem, linked to the service provider.

The communication means may include a dial-up facility into an information network with communication links such as dedicated lines to another service provider, or directly to the Internet.

The information network may include at least one computer network or system, with access to at least one database, and preferably may include complex and multiple systems and networks interconnected locally or remotely to each other.

The mechanism for allocating credit may include a financial transaction system for the inputting of account details of a funds transfer mechanism or the identification details of a pre-paid ISP voucher, enabling the allocation of credit upon payment.

The system may further include means of making payment by transfer of financial resources from a user to a service provider in real time or at some future date. The financial resources may include moneys in an account, electronic cash (E-Cash) or credit based accounts, with payments authorised

through a financial institution, such as a bank. The means of making payment may include a system where users purchase ISP tokens from retail outlets. Upon input of a token identification number, a token may be verified by the ISP against a database of token identification numbers and the associated status and value of the tokens can be credited to a user's account, providing them with pre-paid information services. Alternatively, the means for making payment may include a system whereby ISP vouchers are purchased over an information network.

According to a second aspect of the invention there is provided a method for providing access to services of an information network, the method including the steps of providing for the purchasing of credit from an ISP according to a specific means of payment substantially as herein before defined; providing for the entering of a unique user identification; providing for the requesting specific services; verifying the user identification against information contained on a database, thereby ensuring that the user is associated with sufficient credit to proceed; and providing the requested services. The method may include the step of prompting the user and facilitating the purchasing of further credit, once user credit is exhausted.

According to a third aspect of the invention there is provided a method of controlling and managing ISP resources including the step of reflecting the use

of ISP services on a subscriber's credit balance in relation to a selected rate, calculated in accordance with certain information products or services.

According to a fourth aspect of the invention there is provided a system for user identification using a unique user identification code (User ID) that includes at least one of a group consisting of a user name, ID number, account and credit card number. The user ID may also be associated with hardware or software ID such as a hard drive serial number, CPU ID or software ID such as a 'cookie', encrypted data string, identification software or the like.

According to a fifth aspect of the invention there is provided a system for controlling and managing information and database access including means for notifying and interrupting one or more information services to indicate insufficient credit availability and to enable the user to purchase further credit.

According to a sixth aspect of the invention there is provided a system for the recording and logging of subscriber credit comprising at least one of the group consisting of a user base accounting system; an ISP system, incorporating the necessary application software; a financial facility such as a bank network in communication with an Internet access monitoring system at the ISP; and a system administrator connected to an Internet access monitoring system at the ISP.

According to a seventh aspect of the invention there is provided a method and system for verifying the integrity of ISP vouchers, the vouchers including a unique identification number which is associated with a certain status and value, the method including the step of verifying the voucher by comparing it with information contained in a database held at the ISP.

BRIEF DESCRIPTION OF DRAWINGS

A preferred embodiment of the invention will now be described by way of a non-limiting example only and with reference to the accompanying diagrams wherein:

Figure 1 is a block diagram of a first embodiment of a system in accordance with the invention;

Figure 2 is a block diagram of a credit allocation and monitoring process in accordance with the invention;

Figure 3 is an illustration of the system used to register vouchers against a user identification;

Figure 4 is block diagram of a bank network used to sell and distribute prepaid vouchers;

Figure 5 is a schematic illustrating the method in accordance with the invention to replenish user credit by means of prepaid vouchers;

Figure 6 is a schematic illustrating the requesting and allocating of bandwidth by the user;

Figure 7 shows a system for implementing Internet pay-as-you-go with a voucher system according to the invention;

Figure 8 is a schematic of the method used to register credit against a user identification;

Figure 9 illustrates an accounting system used to implement prepaid information services;

Figure 10 is a simplified block diagram of a method of facilitating prepaid services on a communications network.

BEST MODE FOR CARRYING OUT THE INVENTION

For the purpose of this specification, the term "network" or "communications network" shall be taken to include any one or more of the networks associated with the Internet, Intranet, Extranet as well as a Wide Area Network (WAN), Local Area Network (LAN), Virtual Private Network (VPN) or an Managed Private Network (MPN), using any connection techniques such as Diginet services, Leased Line services, on demand connections, X25 networks, satellite services, ATMo (asynchronuous transfer mode), frame relay or other.

The term SP or service provider shall include any party, business or entity providing communication services over digital networks. More specifically, the

term ISP or Internet Service Provider shall be taken to include Service providers offering connection or communication to the Internet with associated services, i.e. news and E-mail. IAP or Internet Access Provider refers to an entity, not necessarily associated with communication services but with providing users with access means to a network or the Internet. The term POP or Point of Presence, refers to a location to which users may direct their communication request for access to a network . The term VPN or Virtual Private Network may include any network connecting one or more entities, providing information services to a select group, which is specifically designed and implemented for them.

MPN or Managed Private Network includes any network between one or more entities, providing communication and information services to a select group. Portals include any information center or information centers providing communication and information services to a select group.

Bank service terminals shall be taken to include POS devices (Point of Sale), ATM's (Automatic Teller Machines), SST's (Self Service Tellers/Terminals), electronic commerce portals and CAT's (Client Activated Terminals), as well as other devices such as an electronic kiosk.

The user ID may be associated with any one or more of: a user name, user

identification code, login name, user database identity, user security code, user identity number, user account, credit or bank account number.

Tokens/credits shall be purchased or received as bonuses, through loyalty programs, or any other incentive based technique whereby such tokens/credit may be accrued.

Detailed in Figure 1, there is shown a system for accessing an information network including a user A, at a user base such as a set-top box 1, linked to a television and a communication device such as a modem 3; and a user B, with a personal computer 2 and a modem 3 linked to an information network service provider such as an ISP 4 through a POP. Credit balances are held in a database 5 at one or more of the following: the ISP 4, the financial institution 6 and the administrator 7. All of the above are linked to each other via the WWW, the Internet 10 or other means. Network connections, 8 and 9 respectively, extend between the Administrator 7 and ISP 4 and the ISP 4 and financial institution 6, as indicated. Furthermore, the users credit balance could be held at the user bases 1 and 2 through appropriate means, i.e. on memory means, smart disk or the like *(not shown)*, or on a database held on an information network.

Figure 2 is a block diagram of a credit allocation and monitoring process, with a user dialing into a service provider and logging into the information network

12. The user is presented with the ISP interface 13, such as a home page. Whether or not access to information services and products could be awarded is determined by verifying that the user ID is associated with sufficient credit to pay for said products or services. If the user has sufficient credit, the value is determined 16 and access is granted to a selected service or product 17. If the user has no credit, credit could be acquired by means of a credit transaction 14 and/or funds transfer or electronic payment transaction 15 at a certain rate.

Access 17 to user selected products or services 18, 19, 20 is continuously monitored 21. The monitor could evaluate time 23, i.e. the duration for which access is granted; non-gratuitous Internet sites, downloads or services accessed or used; or the data throughput rate 24. Should the user's credit become completely exhausted, process 14 or 15 is initiated. When the connection is broken or the user exits the information network 25, the monitor is updated and the database is accessed to update the user credit balance.

Figure 3 shows a simplified embodiment of the invention illustrating the use of voucher registration and/or reference codes for the purpose of registering credit to a user ID; including a slip or voucher 26 with codes or numbers thereon with a second slip 27, if a speedpoint or other POS (Point Of Sale) device is used. The voucher for registering or replenishing credit could be purchased from a bank network 28 comprising bank terminals 29 connected to a Bank mainframe

30, which in turn, is connected to a service provider database 31 that contains voucher identity numbers. A second database 33 contains account details of users 34 and could include data on the slip or voucher 35, i.e. the voucher ID and a transaction number 36 and/or reference number 37. The voucher identification code is used to register value to a users ID at the service provider, and is used to replenish the user's electronic purse so that they can subsequently purchase products and services over the information network.

Figure 4 is a basic block diagram illustrating a bank type network 38 used to sell and distribute prepaid vouchers, comprised of an electronic network 39 connected to one or more banks 40, which can recharge user accounts from one or more databases 41 directly via a link with the database or via the ISP 43. Furthermore, the Banks 40 can be connected to a switch 42, such as SASWITCH or Multinet. The vouchers or tokens can be sold and distributed via any bank service terminals, such a ATM's 44, SST's 45, CAT's 46 or others 48, or via point of sale devices 48, i.e. speedpoints, cardpos, etc.

Figure 5 is a schematic diagram illustrating the method 49 for using vouchers to replenish or register value at an ISP 50. The ISP is connected to a first database 52 containing voucher identity codes 54 which are checked / verified before a value is associated with a user identity 55, contained in a second database 53. This allows user access to information networks or purchase of

information products for a predetermined period, i.e. for 15 days or a limited duration, i.e. 2 hours of Internet access. A voucher can be used to replenish or register value 57 on the account or electronic purse 58 of another user for use in purchasing products and/or services 59 from the information network.

Figure 6 shows a system of the invention, where users request and pay for a specified bandwidth 61. A first user 62 can select a service 63, that is associated with a certain minimum bandwidth requirement, for example video conferencing. The system automatically allocates bandwidth 64 to a user, enabling them to access the information they desire. User credit, registered either at the ISP or at a financial institution, is depleted as the bandwidth is used. A second user 63 selects a required bandwidth 64, i.e. a 32K line 65 and is provided with this service. In yet another example two users 66, 67, use the same line 68 but share it according to a certain ratio. Furthermore, a user 69 may have a predetermined bandwidth requirement for a specified period of time 70 which will then be charged accordingly.

Figure 7 shows an embodiment of prepaid Internet or Internet pay-as-you-go 71; including an ISP (Internet service provider) 72 with a plurality of modems 73 or communication interfaces at a POP (Point of presence) 74. Vouchers are registered against a user ID 75 and monitored in relation to usage 76. Subsequently, the resultant user credit 77 is calculated in relation to time used

or information accessed or at a standard fixed rate 80.

Figure 8 shows the method 81 used to register credit against a user ID. A user at user base 82 dials into an ISP 83 where they are requested to input their user ID 84 (if not automatically determined). The input is verified against a database of available users with another procedure 88. If the user ID is invalid 91, it is be re-registered 93 or a user exits 94. After verification or registration of the user ID, the user inputs a voucher identification number 85, subsequently verified 86 against a database of available vouchers 87. If invalid 92, it can be re-entered 93, and if valid the associated credit is registered 96 against the user ID, and access is enabled 96. As the user accesses the network 98, user credit is updated 99 until the user logs off the network 100.

Figure 9 shows accounting system 101 used in the invention. A plurality of modems 102 or communication interfaces via a POP 103 allows users to dial-up or connect to an ISP 109 for access to the Internet. Alternatively, the users is associated with fixed network connections 104. User ID's are registered 105 in relation to available credit at the user database 108. Products and services are monitored 106 and updated 107 as access to the Information network is granted. In one embodiment the credit registration and/or allocation process is associated with an account transfer at a financial institution 113. Funds are transferred from a first account 111 of a user to that of a service provider 112,

in real time, after which credit is allocated.

Figure 10 is a simplified illustration of a method 115 of facilitating prepaid services on a communications network, comprising at least one user 116 with communication means 120 to at least one service provider 117 which is connected to at least one information network 119. Furthermore the invention includes a mechanism 118 that facilitates the allocation of credits to user ID.

It will be appreciated that many variations in detail are possible without departing from the scope and/or spirit of the invention as claimed in the claims hereinafter.